Santiago de Los Caballeros

Urbinsight Project

Map Book

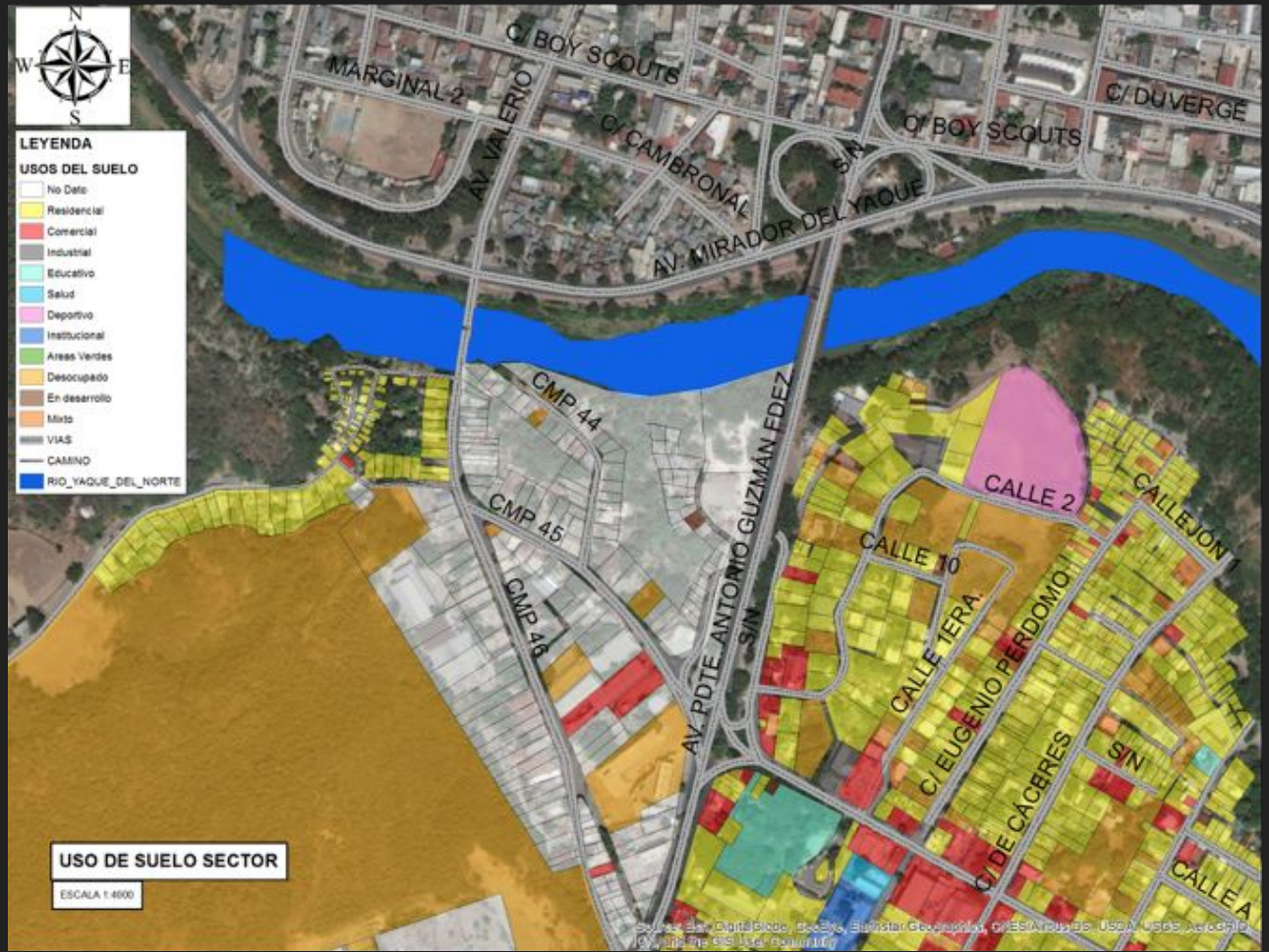
Phase I - 2017

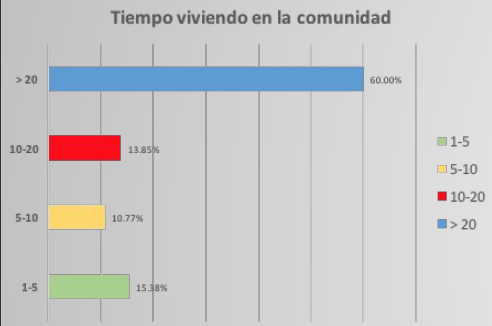
2C teamed with their on the ground implementer, Ecocity Builders; POT - Santiago; and Santiago's oldest and most prestigious university Pontificia Universidad Catolica Madre y Maestre (PUCMM) through their Center for Regional and Urban Investigations (CEUR) and Santiago Solidario (SS) a community based group that has been working within the eleven vulnerable floodplain communities since the devastation of their communities in the 2007 flood. Together these parties worked under the 2C project to collect, document and map important disaster planning information within each of these three vulnerable communities. POT Director, Marco Gomez and CEUR Director, Daritza Nicodemo and ECB developed a survey based on the basic geographical, demographic, water demand and vulnerability within Granito Hernández, Suelo Duro, Valle Encantado. POT, CEUR, SS and ECB worked as the local 2C team to bring technical GIS training to 24 Santiago-based professionals through a 2C course at PUCMM. The course participants collected community data on the ground and in the field. The following maps were created as a result of this 2C project implementation. Each of these maps is available for viewing in shapefile format on the 2C Geoexplorer that was developed by the ECB team.

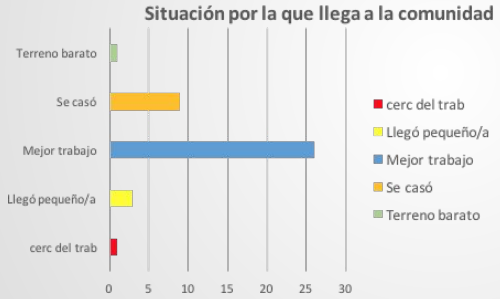
In their intro to GIS activity, 2C Course participants worked in ArcGIS with Google Earth satellite imagery and municipal layers provided by the 2C data sharing agreement with Santiago de los Caballeros to make some context maps for their 2C Course investigations. They first outlined the borders of the three neighborhoods in focus: Granito Hernández, Suelo Duro, Valle Encantado (Top Left). These three neighborhoods were selected as case studies that could provide insight into the eleven neighborhoods of the same archetype: unplanned and high vulnerability do to location in the floodplain. Course participants then identified and mapped the bodies of water and floodplain zone that put these three neighborhoods in direct risk of flood damage, disease, and landslide. (Below Left and on following page).

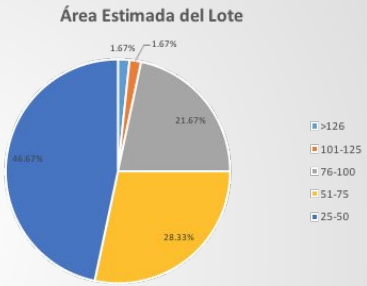
Photo above was provided by the POT - Santiago (the local Land-Use Planning Department). In 2007 the Yaque River grew with heavy rains. The river water quickly filled in the floodplain highlighted in this 2C original map causing many deaths and displaced communities. All three focal neighborhoods are located entirely within the floodplain of the El Yaque River and are at risk for severe flooding like the flood shown above. These natural disasters are part of natural cycles for the the river and will continue to impact communities situated within the floodplain. POT - Santiago is working to better understand the communities within the floodplain to avoid further deaths and destructions.

Houses and living structures are being built at a rate that the municipality of Santiago cannot keep up with documentation and authorization. Many community members tear down trees or climb higher in the hills to find a space to quickly build a new home. Homes are built mostly of inexpensive and short lived materials. Few are made of concrete blocks or to municipal code. One of the most basic tasks at hand was to count the number of houses and buildings in each neighborhood, collect land-use information about those structures and outline the parcels to develop land-use and parcel maps for the POT. This information was collected and used to create this map.

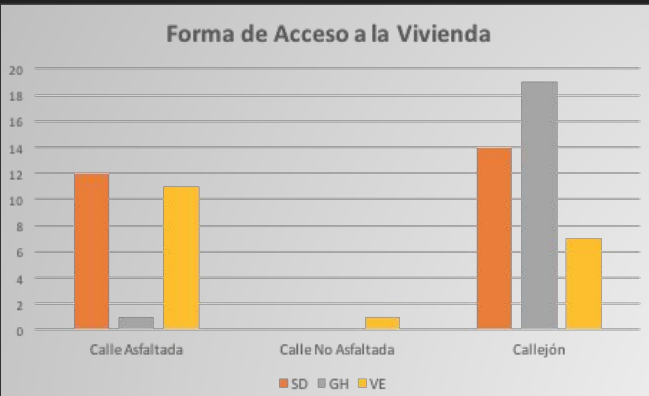


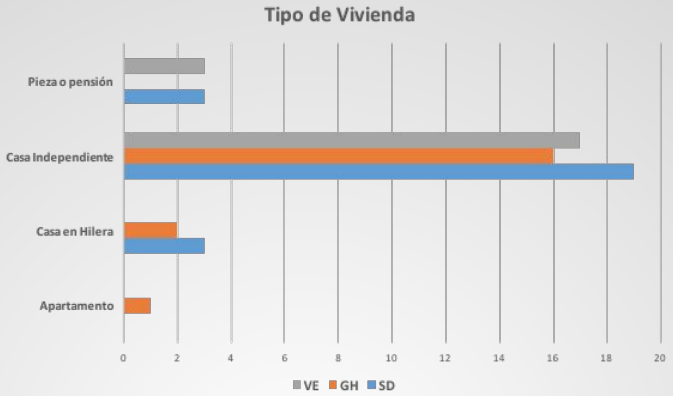


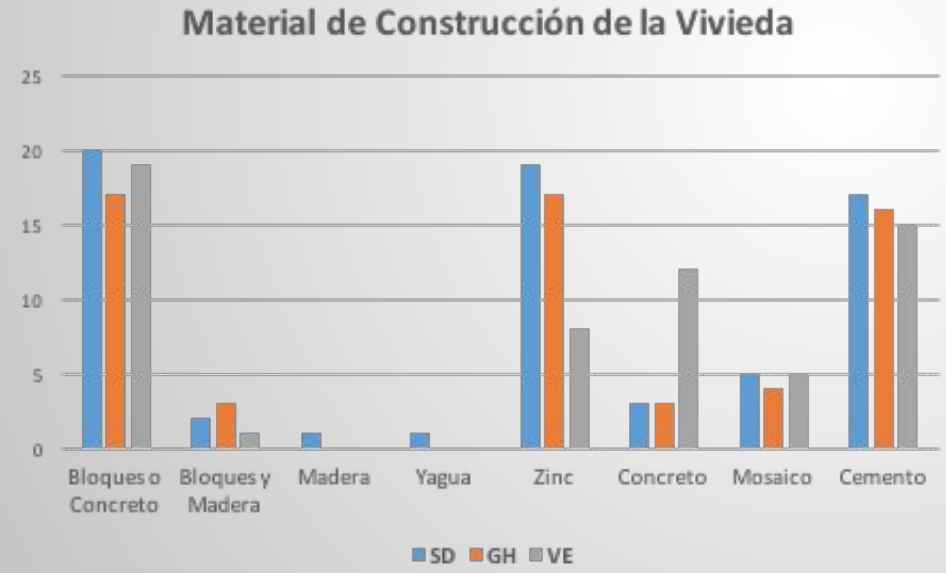


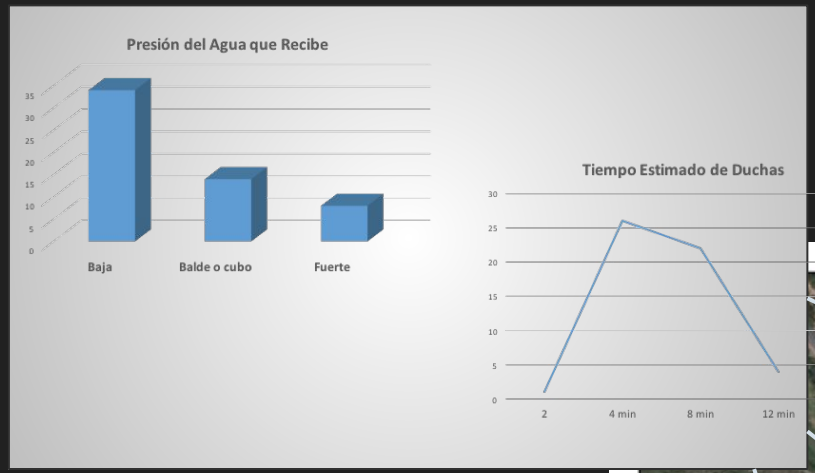


In addition to collecting the land-use and parcel information on the previous slide, 2C course participants gathered data to help inform POT, academics and local ngo's to make sensitive decisions around improving the quality of life, security and sustainability in these communities. Participants in the course collected this information and developed helpful infographics to quickly understand the dispersion of results. Above are the results requested by Santiago Solidario. SS wanted to learn more about what motivated citizens to live and construct homes in these vulnerable sites. These graphics summarize the results collected in the three neighborhoods. The following page holds photo documentation and infographics of results requested by ECB and POT which included building information and materials questions into the citizen surveys.

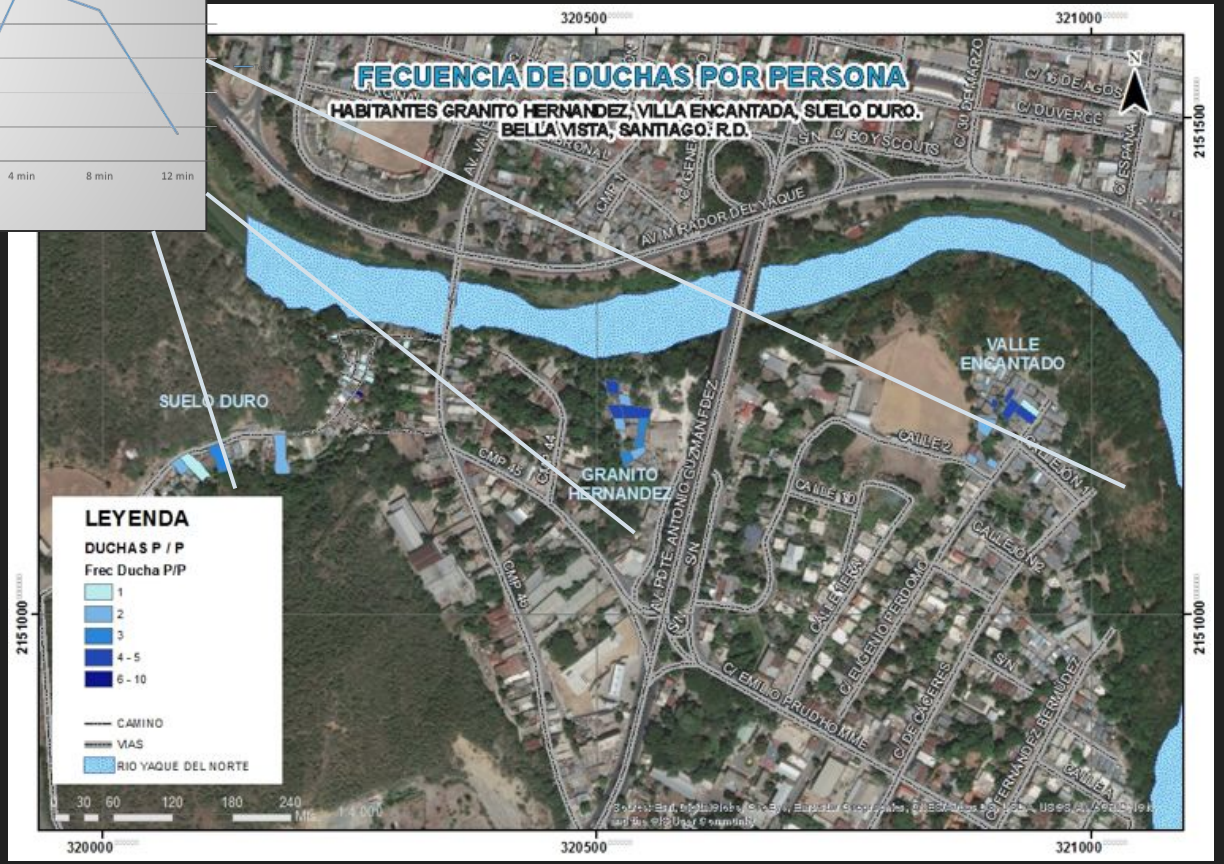

Forma de Acceso a la Vivienda
20
18
16
14
12
10
8
6
4
2
0
Calle Asfaltada
Calle No Asfaltada
Callejón
SD GH VE


Tipo de Vivienda
Pieza o pensión
Casa Independiente
Casa en Hilera
Apartamento
0 2 4 6 8 10 12 14 16 18 20
VE GH SD


Material de Construcción de la Vivieda
25
20
15
10
5
0
Bloques o Concreto
Bloques y Madera
Madera
Yagua
Zinc
Concreto
Mosaico
Cemento
SD GH VE



Participants in the course collected data around water consumption in the three neighborhoods. Later, during their 2C Mapathon and in further 2C Course sessions, the course participants created infographics as well as maps to show geospatial distribution of the responses they collected. These visualizations of important community data was then prepared into a presentation to report back to the community members to better understand the source of water, how it is being consumed and perspectives of the quality of that water in their communities.

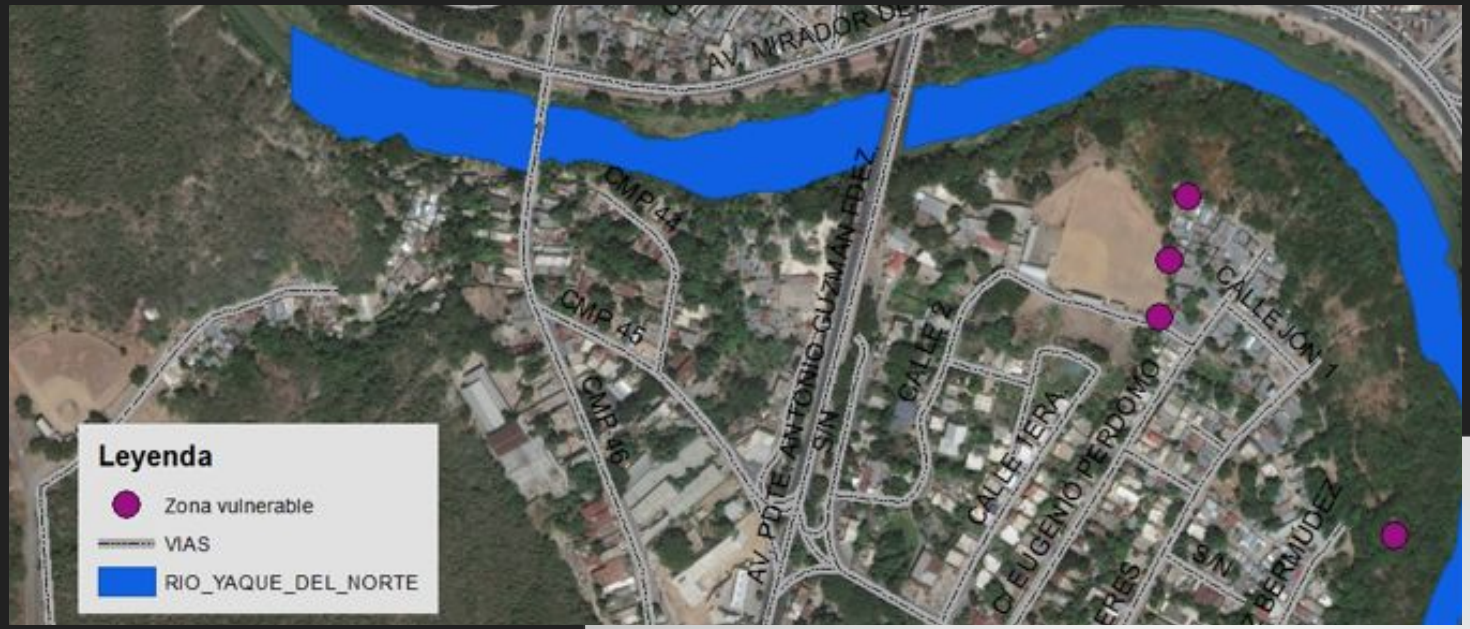


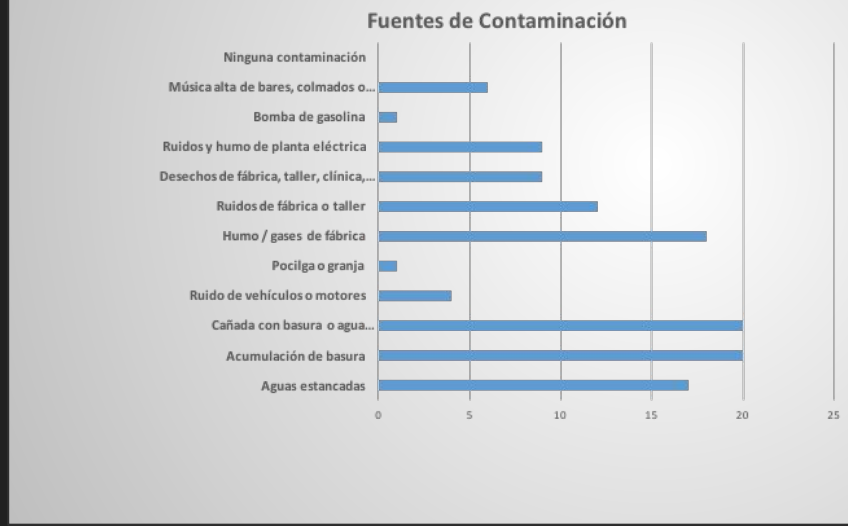
This map outlines the frequency with which residents shower per day.

This map outlines the residents' sources of water.
Options include:
Aquaduct
Outside Spicket
Spring

This map identifies whether a resident has access to municipal water service and if they pay for that service.

This map indicates the surveyed resident's opinion of their water quality (if their home receives water).





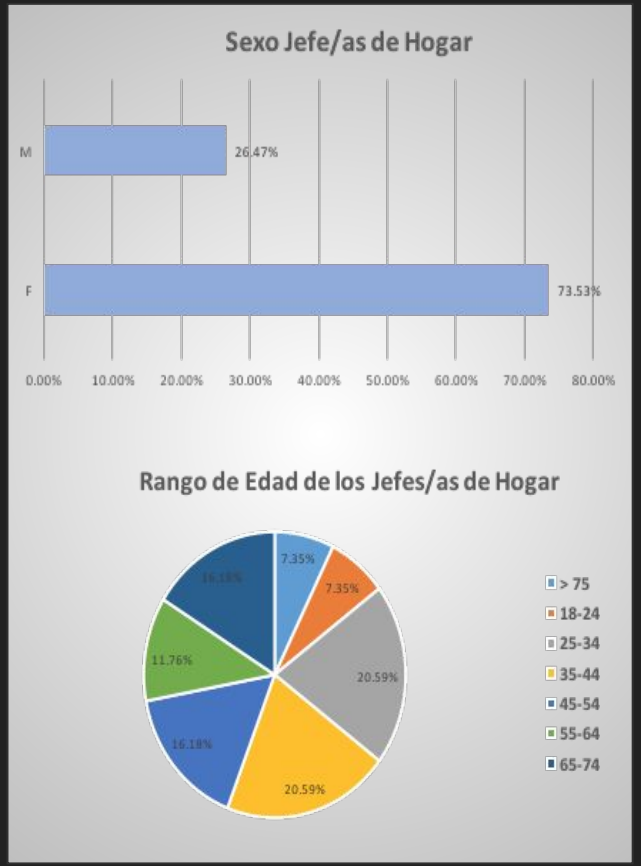
Two course participants were assigned to map areas of vulnerability in each of the three focal communities. They documented poorly built structures, blockages in roadways, contamination sites and drug sales throughout the neighborhoods. These points were mapped above, photo documented, and contaminant sources were investigated and made into this infographic.

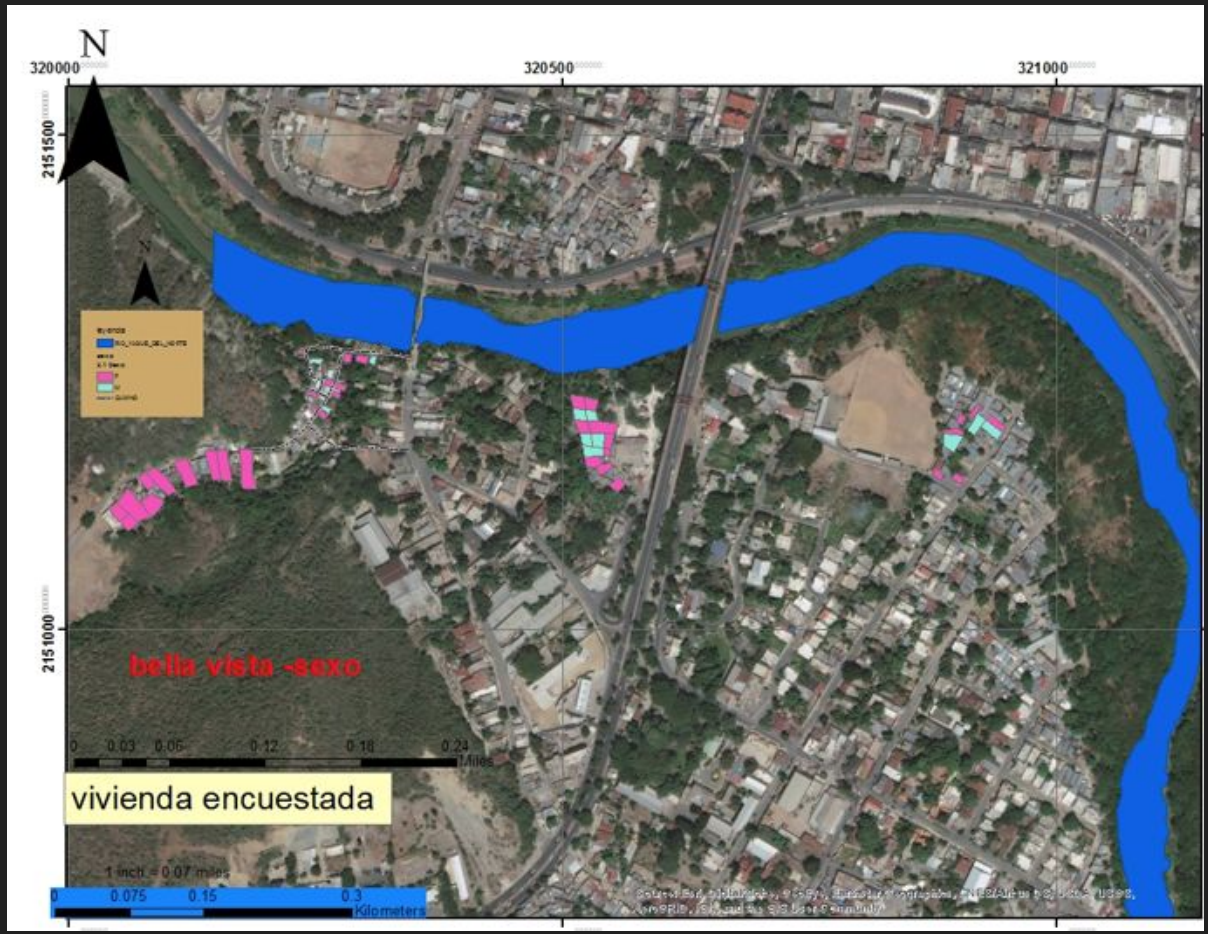
This map identifies waste elimination practices throughout the three communities. When asked where residents were disposing of their waste, the responses ranged from the following options (in order): the city collects it, patio or hillside, they burn it, and Yaque River or Canal. As can be seen in the previous slide, many hillsides are inundated with material waste from homes that do not receive municipal support for waste collection.

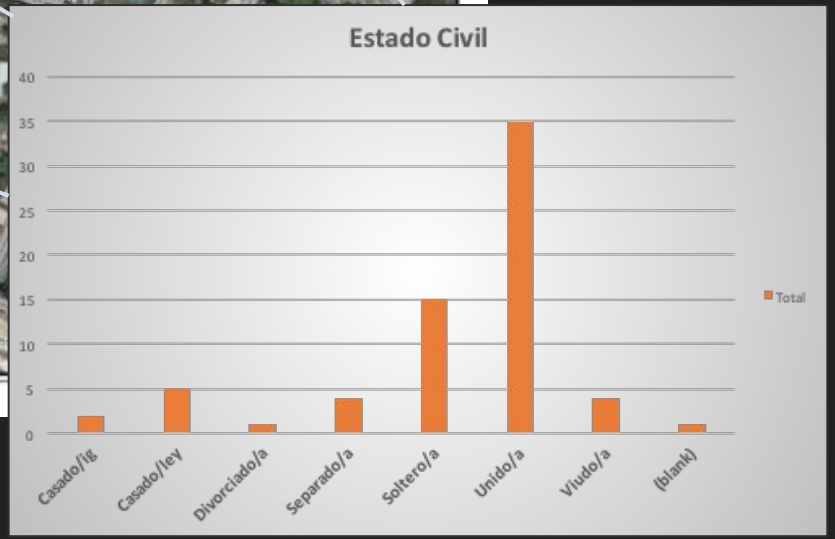
This map takes a closer look at the build up of material waste throughout the Suelo Duro neighborhood. This neighborhood is situated on a hill with extremely narrow roads. These physical characteristics pose challenge to the implementation of a municipal waste collection system and currently there is no waste collection service available to residents of this informal neighborhood.

MAPA DE USOS DE SUELO, SECTOR SUELO DURO.

CEUR has been administering demographic surveys throughout Santiago. This information, especially when geospatially processed and analyzed in conjunction with other data layers can provide helpful insights for the city, researchers and development organizations to better understand human geography. The 2C course participants collected this information and used it to develop infographics and maps in order to better communicate their ideas during the presentations to the communities. This map identifies the gender of each surveyed resident. The bar graph identifies the "head of household" as female or male, and the pie chart identifies the age range of the "head of household".

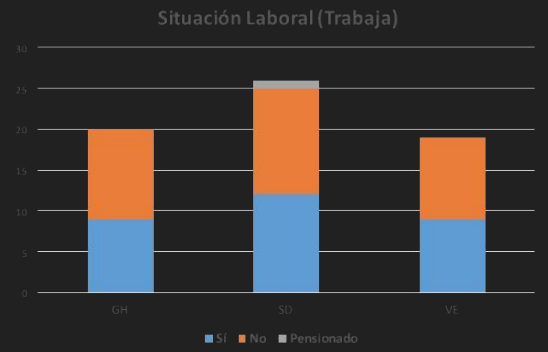


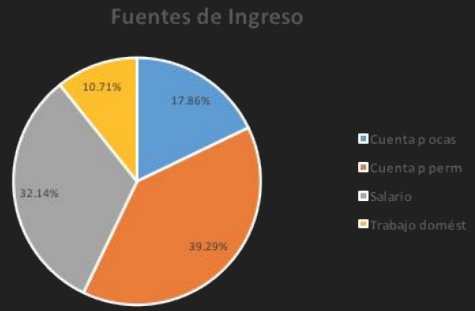


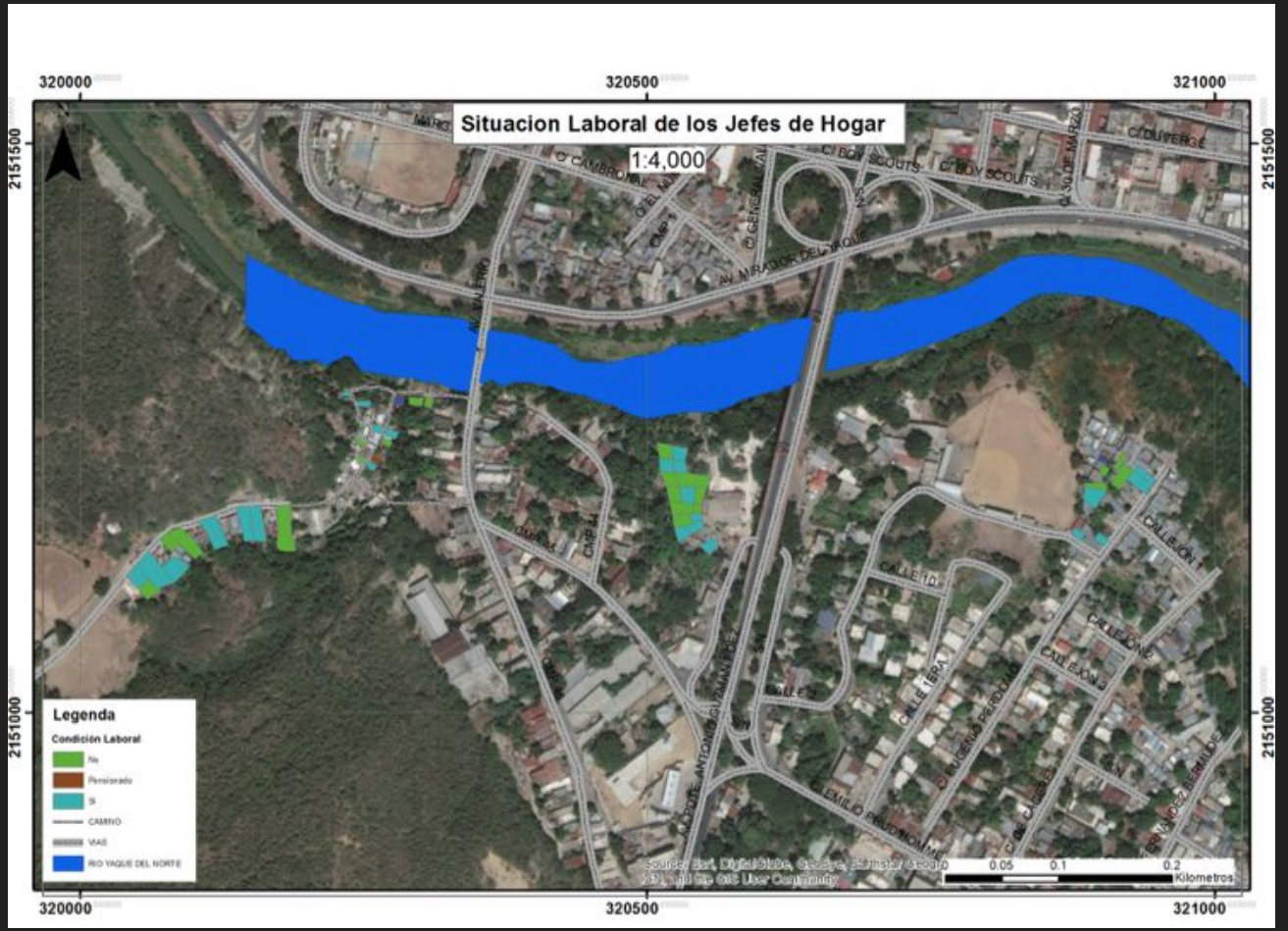


This bar graph identifies the marital status of the “head of household” in each surveyed household. This map reiterates the same message geospatially.

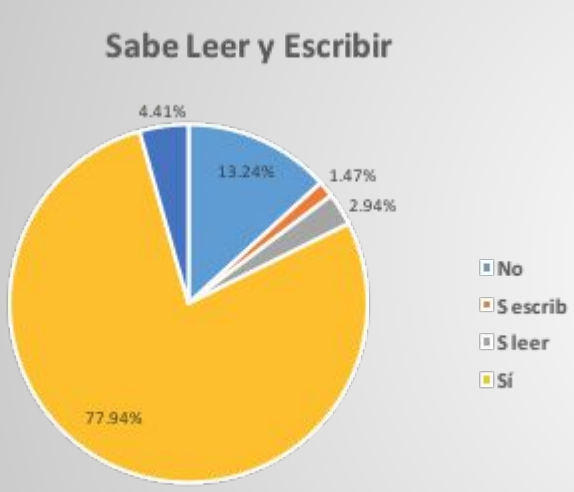
This map identifies the employment status of the “head of household” in each of the homes surveyed. The top graph directly corresponds to those same data points and the bottom graph describes the sources of income per household.

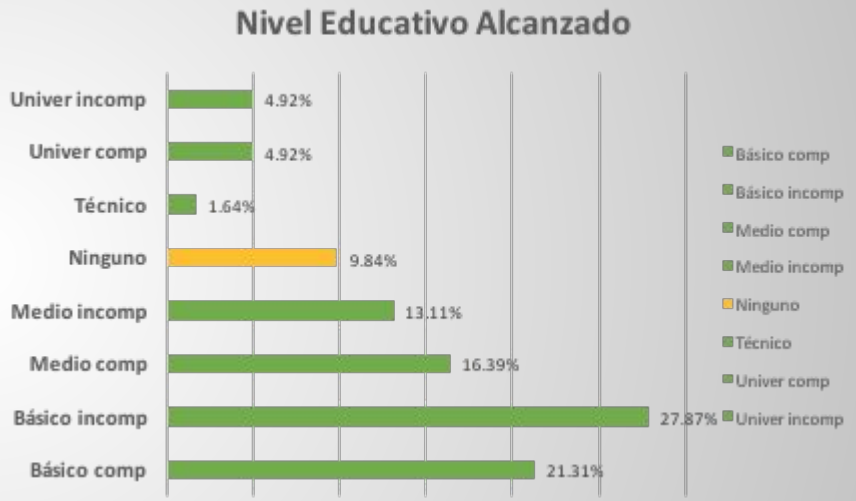






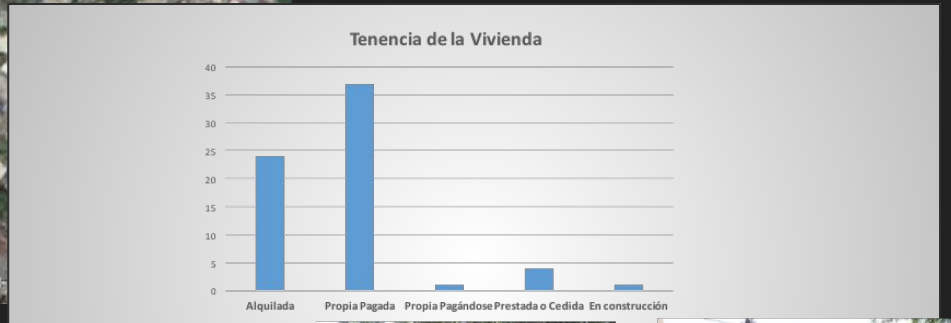
These graphics summarize the surveyed resident's level of education and the ability to read and write.





This map indicates the nationality of the survey community member. The two responses provided were Dominican and Haitian.

This map and graph were both developed from the same community sourced data. They identify whether the homes surveyed are rented, owned and entirely paid for, owned and in the process of paying off, borrowed or in construction. The photo documentation below demonstrates the variation of buildings and materials that can be found in these communities.



This map communicates which of the surveyed homes have electricity and if the home has electricity whether or not the household pays for their service.